REMARKS

Claims 1, 3, 5-7, 11, 13, 15, 17-21, 23, 25, 27-41, 43, 45 and 47-65 are pending in the application. Claims 8, 18, 28 and 48 are objected to as they depend on cancelled claims.

Applicants acknowledge that the previous objections to claims 4, 6, 10, 14, 16, 20, 24, 26, 30, 44, 46, 50 and 61 are withdrawn.

Applicants acknowledge that the previous rejection of claims 1, 3-11, 13-21, 23-41 and 43-61 under 35 U.S.C. 112, 2nd paragraph, is withdrawn.

Applicants acknowledge that the previous rejections of claims 41 and 43-50 under 35 U.S.C. 112, 2nd paragraph, are withdrawn.

Applicants acknowledge that the previous rejection of claims 41 and 43-50 under 35 U.S.C. 112, 2nd paragraph, is withdrawn.

Applicants acknowledge that the previous rejections of claims 51-60 under 35 U.S.C. 101 are withdrawn.

§112 Rejections

Claims 1, 3, 5, 7-11, 13, 15, 17-21, 23, 25, 27-41, 43, 45 and 47-65 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification. In light of the amendments and arguments provided herein, Applicants respectfully traverse this rejection.

Regarding Examiner's assertions that claims 1, 11, 21, 41, and 51 are allegedly not supported by the original disclosure since they recite that the modeling a dependence of the deposition rate is based upon a target life of the sputter target, the amendment provided herein

causes this rejection to be moot. Although Applicants assert that the original disclosure supports this limitation, in the interest of expediency, Applicants have amended the claims to address the Examiner's rejection.

Regarding Examiner's assertion that claim 61 is allegedly not supported by the original disclosure since it recites modeling said dependence of the deposition rate being based upon a target life of the sputter target the amendment provided herein causes this rejection to be moot. Although Applicants assert that the original disclosure supports this limitation, in the interest of expediency, Applicants have amended the claims to address the Examiner's rejection.

The Examiner asserted that claims 1, 11, 21, 31, 41, 51, and 61 recites "modeling said dependence of the deposition rate comprising using sensor data relating to metal deposition processing for performing said modeling," and that this element is not allegedly supported by the specification. Applicants respectfully disagree. There is adequate support in the specification for the claimed feature of modeling of the dependence of the deposition rate to comprise using sensor data relating to metal deposition processing. For example, the specification discloses that "the monitored sensor data 115 may be used in a metal deposition rate model..." *See*, specification, page 9, lines 14-21. The specification discloses that the use of monitored sensor data may be used in a deposition rate model to perform process adjustments. *See*, specification, page 9, lines 21-22; *also see* page 11, lines 11-13. These examples are indicative of the fact that sensor data relating to metal deposition processing is used for performing said modeling are adequately disclosed in the specification. Therefore, those skilled in the art would find proper support in the specification for the claimed feature "modeling said dependence of the deposition rate comprising using sensor data relating to metal deposition processing for performing said

modeling." Accordingly, all elements of claims 1, 11, 21, 31, 41, 51, and 61 are adequately supported by the specification.

Regarding claim 62-65, the Examiner asserted that claimed features "modeling the changes in the deposition rate" and "modeling the changes over a predetermined life of the sputter target" are not supported by the specification. Applicants respectfully disagree. The specification indeed supports these claimed features. For example, the specification discloses an illustration of sputter target life being plotted against deposition rates. *See*, Figure 2, specification, page 7, line 20-page 8, line 2. The changes in the deposition rates as well as the changes in the sputter target is disclosed and described in the specification. Further, the specification discloses that the dependence of the metal deposition rate on the sputter target life may be determined by modeling, which is described in the context of Figure 2 (e.g., changes in the deposition rates and changes in the sputter target). *Id.* Therefore, this is one example of sufficient disclosure of support for the claimed features "modeling the changes in the deposition rate" and "modeling the changes over a predetermined life of the sputter target." Accordingly, all claimed features of claims 62-65 are supported by the specification.

In light of the above, independent claims 1, 11, 21, 31, 41, and 51 are allowable for at least the reasons cited herein. Further, depended claims 3, 5, 7-10 and 62-65, which dependent from claim 1; claims 13, 15 and 17-20, which dependent from claim 11; claims 23, 25 and 27-30, which dependent from claim 21; claims 32-40, which dependent from claim 31, claims 43, 45-50, which dependent from claim 41; and claims 52-60, which dependent from claim 51 are allowable for at least the reasons cited herein.

§102 Rejections

Claims 1, 3, 5-7, 13, 15, 17-21, 23, 25, 27-41, 43, 45 and 47-65 are rejected under 35 U.S.C. 102(b) as being anticipated by ***Turner*** (US Patent No. 4,166,783). Applicants respectfully traverse this rejection.

The present invention is directed to modeling the dependence of the deposition rate on plasma power or the deposition time. The claims call for modeling the deposition rate on a based upon the target life of the sputter target. This is in contrast with ***Turner*** since it does not disclose modeling the deposition rate at all. ***Turner*** discloses a sputtering system, in which the desired deposition rate information is inputted by an operator to calculate the required power (see col. 3, lines 30-34). The Examiner had previously asserted that ***Turner*** does not disclose modeling the deposition rate on the deposition time. *See* page 12, paragraph 15 of the previous office action dated 09/12/2006. ***Turner*** discloses that deposition rate sensors are not used to complete a feedback loop, but use the sputtering source itself. ***Turner*** discloses using the sputtering to allow for regulation and correction of a process (col. 3, lines 64-67). However, ***Turner*** does not disclose monitoring the consumption of a sputter target to determine a deposition rate, as called for by claims of the present invention.

Applicants assert that claims 1, 3, 5, 7-11, 15, 17-21, 23, 25, 27-41, 43, 45, and 47-65 are not anticipated by ***Turner***. The claims of the present invention calls for modeling the dependence of the deposition rate, which includes using the deposition sensor data for performing the modeling of the dependence of the deposition rate to a deposition plasma power. The claims call for modeling a dependence of the deposition on a target life of the sputter target, which are elements that are not disclosed by ***Turner***. The Applicants respectfully assert that ***Turner*** does not disclose or suggest all of the elements of the claims of the present invention.

For example, the Examiner cites column 3, lines 23-32 of ***Turner*** to read upon the element of monitoring the consumption of the sputter target to determine a deposition rate, as called for by claims of the present invention. See page 5 of the office action dated April 4, 2007. However, ***Turner*** merely discloses that the deposition rate, the power consumption, and the aging characteristics may be expressed as an empirically obtained function specific to the cathode material. The age of the cathode is expressed in kilowatt hours. *See*, col. 3, lines 23-32. However, this does not relate consumption of a sputter target to the deposition rate and indicate modeling the dependence on the deposition rate based on the target life of the sputter target. Merely expressing aging characteristics in a function with the cathode material as one of its parameter does not relate to performing the modeling of the dependence of the deposition rate based on the target life of the sputter target as called for by claims of the present invention.

Further, in the previous related Office Action, the Examiner makes an implication of deposition plasma power and target life from ***Turner***. However, this implication is not supported by either the Examiner's arguments, or by the disclosure of ***Turner***. The power consumption disclosed by ***Turner*** generally refers to the power dissipated by the excitation source, which is monitored by examining the current drawn from the cathode and the cathode-anode voltage (*See* col. 1, lines 42-47). ***Turner*** does not disclose modeling the dependence of the deposition rate to a deposition plasma power, and Applicants respectfully assert that the Examiner does not offer evidence to imply the deposition plasma power. Applicants respectfully assert that there is no disclosure or any evidence provided by the Examiner to make such an implication and it would be inappropriate in a rejection under 35 U.S.C. § 102. ***Turner*** discloses that the current drawn from the cathode supply is controlled in response to power dissipated in the plasma, the cumulative usage of the particular target, the pressure and the desired deposition rate. (*See* col. 3,

lines 7-11). However, ***Turner*** does not disclose modeling these relationships. Furthermore, ***Turner*** does not disclose modeling based upon a target life of the sputter target, as called for by claims of the present invention. Therefore, the claims of the present invention are allowable.

Also, the Examiner cites the sputtering source in ***Turner***, which the Examiner assert may be used to provide rate information to illustrate a prior art sensor. However, Applicants respectfully assert that even though ***Turner*** may mention deposition rate monitors that are used to control the excitation source of the plasma discharge and/or the sputtering source, these disclosures are not enough to anticipate or suggest all of the elements of claim 1 of the present invention. For example, as explained in more detail below, ***Turner*** does not disclose modeling the dependence of the deposition rate on plasma power. As another example, ***Turner*** does not disclose modeling any parameters based upon target lives, as called for by claim 1 of the present invention. Although ***Turner*** refers to a deposition monitor, ***Turner*** does not disclose using the deposition monitor to perform any type of modeling. In fact, ***Turner*** discourages the use of the deposition monitor in contrast to the use of deposition sensor data to perform a modeling, as called for by the claims of the present invention. (***Turner*** discloses that a deposition rate sensor is not used to complete the feedback loop of ***Turner***, *See* col. 3, lines 64-65). Therefore, for at least the reasons cite above, all of the elements of claim 1 are not taught, disclosed, or suggested by ***Turner***, and therefore, is allowable.

Turner discloses a sputtering system, in which the desired deposition rate information is inputted by an operator to calculate the required power (*See* col. 3, lines 30-34). ***Turner*** discloses that deposition rate sensors are not used to complete a feedback loop, but use the sputtering source itself. ***Turner*** discloses using the sputtering to allow for regulation and correction of a process (*See* col. 3, lines 64-67). However, ***Turner*** does not disclose monitoring

the consumption of a sputter target to determine a deposition rate, as called for by claim 1 of the present invention. ***Turner*** discloses using the power and duration of the sputtering source operation and calculating a percentage of normalized deposition rate.

Further, claim 1 of the present invention calls for modeling the dependence of the deposition rate on a target life of the sputter target. This is in contrast with ***Turner*** since it does not disclose modeling the deposition rate at all. The Examiner cites the chart in Figure 1 and implies that it refers to modeling of plasma power. Applicants respectfully disagree with this implication. Figure 1 merely plots a relationship between a percentage of normalized deposition rate and kilowatt-hours of operation of the cathode (*See* Figure 1 and col. 2, lines 35-44). This is provided to illustrate the deterioration of the deposition rate. However, this is not equivalent to modeling the dependence of the deposition on plasma power or the deposition time based upon the target life of the sputter target, since ***Turner*** merely demonstrates the deterioration of the deposition rate after a certain amount of kilowatt-hours.

Additionally, the Examiner equates aging of the cathode in use to "target lives," however, the "target lives" refer to the lives of the sputter targets (*See* col. 2, lines 10-13). Therefore, ***Turner*** does not call for modeling any parameters based upon target lives. Additionally, the Examiner states that the graph in Figure 1 plotting the percentage of normalized deposition rate versus the cathode operation (kilowatt-hours) can be used to imply a modeling of deposition rate to plasma power. However, the Examiner offers neither arguments nor evidence to support such a conclusion, nor is there any evidence in ***Turner*** to support such an assertion. Therefore, ***Turner*** does not disclose the element of modeling the dependence of the deposition on plasma power or the deposition time based upon the target life of the sputter target, or using the model to modify a deposition process, as called for by claim 1 of the present invention.

Turner discloses using the desired rate specified by the operator, and using an equation in a loop to correct the power for the usage of a cathode used in the sputtering system (*See* col. 3, lines 32-38, and the equation on col. 3, line 27). ***Turner*** discloses that the duration of the cathode usage is then incremented, updating the kilowatt hours of use (*See* col. 3, lines 38-42). ***Turner*** corrects the current control of the cathode power supply and continues the loop for controlling the processing of a semiconductor wafer (*See* col. 3, lines 46-49). In contrast to ***Turner***, claim 1 calls for modeling the dependence of the deposition rate on the plasma power or deposition time based upon the target life, and using the model to modify the deposition processing to approach a desired thickness. Therefore, claim 1 is not taught, disclosed, or suggested by ***Turner***. Hence, claim 1 is allowable. Additionally, independent claims 11, 21, 31, 41, 51, and 61, which have similar elements that call for modeling the dependence of the deposition rate on the plasma power or deposition time based upon the target life, and using the model to modify the deposition processing, are also allowable for at least the reasons cited above. Therefore, in light of at least the above-presented arguments, claims 11, 21, 31, 41, 51, and 61 are also allowable.

Independent claims 1, 11, 21, 31, 41, 51, and 61, are allowable for at least the reasons cited above. Additionally, dependent claims 3-10, 12-20, 23-30, 32-40, 43-50, and 52-60, which depend from independent claims 1, 11, 21, 31, 41, and 11, respectively, are also allowable for at least the reasons cited above.

The Examiner rejected claims 1, 3, 5, 7-11, 15, 17-21, 23, 25, 27-41, 43, 45, and 47-65 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,478,455 ***(Actor)***. Applicants respectfully traverse this rejection.

Actor does not teach disclose all of the elements of claim 1 of the present invention. As described above, independent claim 1, calls for modeling a dependence of the deposition rate on at least one of deposition plasma power and/or deposition time. Claim 1 also calls for modeling the dependence of the deposition rate comprising using sensor data relating to metal deposition processing for performing the modeling. Claim 1 also calls for modeling the dependence of the deposition rate based upon a target life of the sputter target. Applicants respectfully assert that the Examiner's application of ***Actor*** to claim 1 for the purposes of anticipation is flawed. For at least the reasons set forth below, claim 1 is allowable and its dependent claims 3, 5, and 7-10 are also allowable.

In response to the Applicants' arguments, the Examiner essentially reasserted that every element of claim 1 is taught by ***Actor***. The Examiner alleges that ***Actor*** determines the formula described in col. 7, line 33 either empirically or through computer modeling. The Examiner then alleges that if the formula were determined empirically, or through observation, then the deposition rate must be observed somehow. According to the Examiner, since ***Actor*** determines the deposition rate and uses its value in the formula determined using computer modeling, the deposition rate is likely determined based on a known relationship between the deposition rate and the target age. Based upon this assertion, the Examiner alleges that ***Actor*** obtains the deposition rate of the sputtered species and concludes that all the features of claim 1 were anticipated by ***Actor.*** Applicants respectfully disagree for at least the reasons set forth below.

Actor does not teach modeling a dependence of the deposition rate on deposition plasma power and/or deposition time, as set forth in claim 1. In ***Actor***, computer modeling formulates a predetermined compensation formula that adjusts a selected sputtering parameter such as deposition time or deposition power on a wafer basis. That is, ***Actor*** describes techniques for

controlling a collimated sputtering source by modeling that formulates a predetermined compensation formula. As such, to formulate the compensation formula, ***Actor*** either empirically measures the selected sputtering parameter for determining its value or models a value of the selected sputtering parameter. *See* ***Actor***, col. 5, lines 22-34. This modeling to formulate a predetermined compensation formula or modeling a value of the selected sputtering parameter by ***Actor***, however, does not teach or suggest modeling a dependence of the deposition rate on at least one of the two deposition parameters. ***Actor*** is completely silent about modeling a dependence of the deposition rate on deposition plasma power and/or deposition time, as set forth in claim 1.

The Examiner alleges that ***Actor*** teaches modeling a dependence of the deposition rate on deposition plasma power and/or deposition time, set forth in claim 1. ***Actor*** does not support the Examiner's argument because ***Actor*** models a value of the selected sputtering parameter. That is, in the Office Action, the Examiner appears to assert teaching of the modeling feature because according to the Examiner, the deposition plasma power and deposition time, in claim 1, correspond to sputtering parameters such as deposition time or deposition power in ***Actor.*** In other words, according to the Examiner, the deposition plasma power and/or deposition time are equivalent to the sputtering parameters of ***Actor***. In ***Actor***, however, dependence of the deposition rate on the sputtering parameters is not modeled, but rather a value of the selected sputtering parameter is modeled. Accordingly, modeling a dependence of the deposition rate on deposition plasma power and/or deposition time, as recited in the method of claim 1, is distinct from modeling a value of a selected sputtering parameter.

As amended, the method of claim 1 includes using sensor data relating to metal deposition processing for performing the modeling a dependence of the deposition rate on

deposition plasma power and/or deposition time. Additionally, claim 1 calls for modeling a dependence of the deposition rate on deposition plasma power and/or deposition time based on a target life of the sputter target during metal deposition processing. At most, ***Actor*** uses computer modeling for formulating a predetermined compensation formula that adjusts a selected sputtering parameter such as deposition time or deposition power on a wafer basis. However, ***Actor*** deposits a film at a predetermined thickness as a function of the age of the collimator 60 distinct from the sputter target 70. *See* ***Actor,*** col. 5, line 45. Applicants respectfully submit that ***Actor*** is completely silent about using sensor data relating to metal deposition processing for performing the modeling a dependence of the deposition rate based upon a target life of the sputter target.

Therefore, claim 1 is not taught, disclosed, or suggested by ***Turner***. Hence, claim 1 is allowable. Additionally, independent claims 11, 21, 31, 41, 51, and 61, which have similar elements that call for modeling the dependence of the deposition rate on the plasma power or deposition time based upon the target life, and using the model to modify the deposition processing, are also allowable for at least the reasons cited above. Therefore, in light of at least the above-presented arguments, claims 11, 21, 31, 41, 51, and 61 are also allowable.

Independent claims 1, 11, 21, 31, 41, 51, and 61, are allowable for at least the reasons cited above. Additionally, dependent claims 3-10, 12-20, 23-30, 32-40, 43-50, and 52-60, which depend from independent claims 1, 11, 21, 31, 41, and 11, respectively, are also allowable for at least the reasons cited above.

The Examiner rejected claims 1, 3, 5-7, 13, 15, 17-21, 23, 25, 27-41, 43, 45 and 47-65 under 35 U.S.C. 102(b) as being anticipated by Smith, T.H., Boning, D.S., Stefani, J. and Butler, S.W. *"Run by Run Advanced Process Control of Metal Sputter Deposition,* (hereinafter ***Smith***).

Applicants respectfully assert that the Examiner erred in alleging that ***Smith*** anticipates all of the elements of the independent claims of the present invention. The Examiner did not provide an element by element assertion of anticipation of any of the claims of the present invention based upon ***Smith***. The Examiner merely cited to an entire section by asserting "See Section III" of ***Smith*** to imply anticipation of claims of the present invention. This is clearly an improper rejection of the claims since no arguments have been provided as to how any disclosure of ***Smith*** anticipates any element of claims of the present invention.

Smith does not disclose modeling the dependence of the deposition rate on the deposition plasma power and/or the deposition time. ***Smith*** does not disclose modeling a dependence of the deposition rate on a target life of the sputter target. ***Smith*** discloses an estimate of the deposition rate over the life of the sputter target and collimator. *See* page 278 of ***Smith***. The control methods disclosed by ***Smith*** require an assumption that the drift rate is constant over the life of a sputter target. *Id.* Claims of the present invention, *e.g.,* claim 1 calls for modeling the dependence of the deposition rate on a target life of the sputter target. ***Smith*** simply does not modeling the dependence of the deposition rate on a deposition plasma power and/or deposition time, and modeling the dependence of the deposition rate on a target life of the sputter target. ***Smith*** merely discloses estimating the deposition rate over a life of the sputter target and collimator. Separately, ***Smith*** discloses performing a power compensation method by performing a sputter tool compensation for a decrease in rate by increasing power. *See* page 278 of ***Smith.*** This is a control strategy for controlling a processing tool. In other word, ***Smith*** is merely referring to controlling a tool. ***Smith*** fails to disclose the modeling processes called for by claims of the present invention.

The Exponentially-Weighted Moving Average (EWMA) filtering disclosed by ***Smith*** does not provide sufficient disclosure to anticipate the modeling called for by claims of the present invention. ***Smith*** discloses that a EWMA controller smoothes out past data for every run in order to estimate the current process state. *See* page 279 (Section III) of ***Smith.*** The EWMA controller of ***Smith*** is directed to tracking the process state to update a model. *Id.* The PCC of ***Smith*** merely adds an EWMA estimate of the prediction error (the trend error) in the EWMA controller. This provides for the PCC controller to remove any lag in the EWMA controller. *See* page 279-280 (Section III) of ***Smith.*** However, the EWMA and the extension of the EWMA controller (*i.e.*, the predictor-corrector controller [PCC]) of ***Smith*** does not disclose modeling the dependence of the deposition rate on the deposition plasma power and/or the deposition time, as called for by claim 1 of the present invention. The PCC described in ***Smith*** also does not disclose modeling a dependence of the deposition rate on a target life of the sputter target. The Examiner has failed to provide any specific citations of ***Smith*** to show anticipation of any of the elements of claim 1 of the present invention. Accordingly, claim 1 of the present invention is allowable. Further Additionally, independent claims 11, 21, 31, 41, 51, and 61, which have similar elements that call for modeling the dependence of the deposition rate on the plasma power or deposition time based upon the target life, and using the model to modify the deposition processing, are also allowable for at least the reasons cited above. Therefore, in light of at least the above-presented arguments, claims 11, 21, 31, 41, 51, and 61 are also allowable.

Independent claims 1, 11, 21, 31, 41, 51, and 61, are allowable for at least the reasons cited above. Additionally, dependent claims 3-10, 12-20, 23-30, 32-40, 43-50, and 52-60, which depend from independent claims 1, 11, 21, 31, 41, and 11, respectively, are also allowable for at least the reasons cited above.

§103 Rejection

Claims 9, 10, 19, 20, 29, 30, 39, 40, 49, 50 and 59-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Smith***, as applied to claims 1, 11, 21, 31, 41 and 51, and further in view of ***Turner.***

The Examiner indicated that ***Smith*** does not "explicitly disclose modeling the dependence of the deposition rate on the target life of the sputter target on the at least one of the deposition plasma power and the deposition time comprises fitting previously collected metal deposition processing data using at least one of the polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting and weighted non polynomial least squares fitting." The Examiner uses ***Actor*** and ***Turner*** to make up for this deficit. However, as described above, neither ***Actor*** or ***Turner*** disclose the modeling of the dependence of the deposition rate on the target life of the sputter target on the deposition plasma power and/or the deposition time as called for by claims 9, 10, 19, 20, 29, 30, 39, 40, 49, 50 and 59-60 by virtue of their respective dependencies to the independent claims described above. Therefore, adding the subject matter to ***Actor*** and ***Turner*** to ***Smith*** does not make obvious modeling the dependence of the deposition rate on the target life of the sputter target on the at least one of the deposition plasma power and the deposition time comprises fitting previously collected metal deposition processing data using at least one of the polynomial curve fitting, least squares fitting, polynomial least squares fitting, non polynomial least squares fitting, weighted least squares fitting, weighted polynomial least squares fitting and weighted non polynomial least squares fitting.

Further, without using improper hindsight reasoning, those skilled in the art would not combine ***Actor*** and ***Turner*** with ***Smith*** and make obvious all of the element of claims 9, 10, 19, 20, 29, 30, 39, 40, 49, 50 and 59-60.

Further, those skilled in the art would not combine ***Turner*** and ***Smith*** with ***Actor***. For example, ***Actor*** specifically *teaches away* from the sensor data relating to metal deposition processing. ***Actor*** specifically suggests that deposition rate sensors are expensive and unreliable and have not gained wide spread commercial acceptance. *See*, col. 2, lines 45-47. Therefore, those skilled in the art would be taught away from employing the disclosure of ***Turner*** and ***Smith*** with ***Actor*** to make obvious the element of using sensor data to perform the modeling called for by claims of the present invention. ***Turner*** does not disclose methods and/or apparatus for modeling the dependence of the deposition rate on the plasma power or deposition time based upon the target life, and using the model to modify the deposition processing to approach a desired thickness. ***Smith*** and ***Actor*** do not make up for this deficit. Therefore, those skilled in the art would not be motivated to combine ***Actor*** with ***Turner*** and ***Smith*** to make obvious all elements of claims of the present invention.

Applicants respectfully assert that the Examiner did not meet the legal standards to reject the claims of the present invention under 35 U.S.C. § 103(a), including the fact that the prior art reference (***Turner***) does not teach or suggest all the claim limitations of claims 9, 19, 29, 39, and 59 of the present invention. The prior art reference (***Turner***) does not teach or suggest all the claim limitations of claims 9, 19, 29, 39, and 59-60. Additionally, the Examiner provided no evidence to support a contention of some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify

the reference. Therefore, the Examiner does not establish a *prima facie* case of obviousness of claims 9, 19, 29, 39, and 59-60 of the present invention.

Applicants respectfully assert that the Examiner did not meet the legal standards to reject the claims of the present invention under 35 U.S.C. § 103(a), including the fact that the prior art reference (***Turner***) does not teach or suggest all the claim limitations of claims 9, 19, 29, 39, and 59-60 of the present invention. The prior art reference (***Turner***) does not teach or suggest all the claim limitations of claims 9, 19, 29, 39, and 59. Additionally, the Examiner provided no evidence to support a contention of some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference. Therefore, the Examiner does not establish a *prima facie* case of obviousness of claims 9, 19, 29, 39, and 59-60 of the present invention.

In light of the arguments provided herein, Applicants respectfully assert that ***Turner*** does not disclose methods and/or apparatus for modeling the dependence of the deposition rate on the plasma power or deposition time based upon the target life using deposition sensor rate data, and using the model to modify the deposition processing to approach a desired thickness, which are called for by claims 9, 19, 29, 39, and 59-60. Using ***Actor*** and ***Smith***, the Examiner uses obviousness arguments to provide the element of modeling deposition rate and power using curve-fitting techniques. However, Applicants respectfully assert that the Examiner does not provide any evidence to support such an assertion. Furthermore, even if, *arguendo*, the element of modeling deposition rate and power using curve-fitting techniques were added to the disclosure of ***Turner***, the deficit of ***Turner*** would not be compensated for since ***Turner*** does not disclose modeling the dependence of the deposition rate on the plasma power or deposition time based upon the target life using the sensor data relating to metal deposition processing, and using

the model to modify the deposition processing to approach a desired thickness, which are called for by claims 9, 19, 29, 39, and 59. Adding ***Actor*** and ***Smith*** would not make up for this deficit. Therefore, the Examiner has failed to prove a *prima facia* case of obviousness of claims 9, 10, 19, 20, 29, 30, 39, 40, 49, 50 and 59-60. Accordingly, claims 9, 10, 19, 20, 29, 30, 39, 40, 49, 50 and 59-60 on the present invention are allowable for at least the reasons cited above.

In light of the arguments presented above, Applicants respectfully assert that claims 1, , 3, 5-7, 11, 13, 15, 17-21, 23, 25, 27-41, 43, 45 and 47-65 are allowable. In light of the arguments presented above, a Notice of Allowance is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, **the Examiner is requested to call the undersigned attorney at the Houston, Texas telephone number (713) 934-4069** to discuss the steps necessary for placing the application in condition for allowance.

Please date stamp and return the enclosed postcard to evidence receipt of this document.

Respectfully submitted,

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